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ABSTRACT

American higher education, according to the authors, is facing a financial crisis that can be alleviated only by drastic, increased federal support to the educational system. Presented in this document is a review of the financial history of American colleges and universities, a look at the present situation, and a preview of the future picture of higher education. Following the past, present, and future review is a discussion of whether a federal role in financing is implied, how much aid should be appropriated, and what form this aid should take. It is suggested that the federal government adopt a financial aid program that would combine institutional and student aid. An institutional grant and student loan program is offered as one major alternative. (HS)

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THE "FINANCIAL CRISIS" IN HIGHER EDUCATION

past, present, and future

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by

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THE "FINANCIAL CRISIS" IN HIGHER EDUCATION: PAST, PRESENT, AND FUTURE

Is there a financial crisis in American higher education: If so, what is its future? That is, is it a temporary, aberrational phenomenon, or a chronic one? Will it get worse? And, if there is a crisis, what should the federal government's role be?

This paper takes the position that there is a crisis, and that--crisis or no--the federal government has an increasing responsibility for the financing of higher education. But the word "crisis" is subject to widely diverging interpretations, and we do not ask the reader to accept the term. We will lay before him the recent past and some options for the future, and attempt to explain why some may view these circumstances as crisis-free, and why we do not.

The question of whether there has been and will be a "crisis" is, in principle, separable from the question of federal support for higher education. That is, one could agree that there is a crisis, without agreeing that there should be expanded federal financing; and one could hold that the federal government should direct more resources toward higher education without accepting our conclusion that there is a crisis. What links the two questions is the practical or political consideration that Congress is unlikely to act significantly to expand aid in the absence of a demonstrated crisis. Having said that, we must add that our analysis will not deal with the question of whether there is a crisis in the political sense of providing the real-world preconditions

to Congressional action.

We divide our analysis into two parts, then: Section I, The Crisis, and Section II, The Federal Responsibility.

I.

The Crisis

Financial pressures have forced a variety of adjustments in higher education; and future pressures will force still more adjustments. Whether one regards these adjustments as harmful or not will be fairly decisive in determining whether he views the situation as critical. We discuss first the past and present; we then consider the future.

A. The 'Fifties and 'Sixties

Variations in birth rates owing to depressions, recessions, and wars, as well as to changing attitudes toward family size, have meant instability in both the size and the rate of growth of the college-age population. In the 1950's, this population remained essentially static, because of the low birth rates of the 'thirties. During the decade of the 1960's, however, the size of this age group (which we take to be 18-24) not only grew, it grew at an average annual rate of 4.2%--faster than the growth in either population or real income. The 18-24 age group, being seven years wide, is somewhat wider than the age range of a majority of undergraduate students; on the other hand, there is a large number of students outside this cohort. The 18-24-year group should be thought of as a proxy for the college-age group, since the latter really has no limits. We take it that when the 18-24 group increases, so does enrollment, other things being equal, and when it declines, enrollment declines, other things being equal.

Not only did the 18-24-year age group grow rapidly, but the fraction of that group attending college also grew. As a consequence, enrollment (as measured by student-years) grew at the astonishing annual average rate of 8.5%--a rate which provides for the doubling of enrollments every 8 1/2 years. (By contrast, the number of student-years grew in the 1950's at only 2.5% per year, a rate implying a doubling in 28 years.)

This record is summarized on lines A, B, and C of Table I. Line A shows that the college-age population did not grow at all in the 1950's (column 1), and grew at the rate of 4.2% in the 1960's (column 2). (For the moment, ignore column 3.) Line B shows the percentage rate of increase in the average number of student-years completed per person of college age. And line C shows the enrollment growths just discussed.

The rapid enrollment growth of the 1960's cannot be directly translated into a financial crisis. We must know something about the dollar cost per student, and the resources available to the institutions. Line D in Table I shows that the average number of staff-units (full-time equivalent professional staff) actually fell in the 1960's, at an average annual rate of 0.9%, an occurrence upon which we shall comment momentarily. The expenditure per staff unit rose, in constant dollars (that is, adjusting for inflation) at an average rate of 3.3% per year. This combination of an 8.5% rate of increase in enrollment, 0.9% rate of decline in staff-student ratios, and 3.3% rate of increase in constant dollars per staff unit, per year, required an increase in funds--in constant dollars--at the rate of 11.1% per year, as shown in line F.

To summarize the 'sixties, then, the problem was generated by an extraordinary rate of increase in the size of the college-age group, and by an extraordinary rate of increase in the tendency of members of that group to go to college. These increases were "paid for" by significant increases in resources, by a reduction in

TABLE I

Average Rates of Growth in Percent Per Year, Student-Years Completed and Related Series, All Institutions of Higher Education, 1950's and 1960's

(In Percent Per Year)

		(1) 1950's	(2) 1960's	(3) 1960's hypothetical[d]
A.	Total number of persons age 18-24	0.0	4.2	4.2
B.	Average student-years completed per person 18-24	2.5	4.1	0.0
C.	Number of student-years produced (A and B combined)[a]	2.5	8.5	4.2
D.	Average number of staff units[b] used per student-year	1.9	–0.9	0.0
E.	Average constant dollar expenditure[c] per staff unit	1.8	3.3	3.3
F.	Total constant dollar current resources used (C, D, and E combined)[a]	6.3	11.1	7.6
G.	Average constant dollar expenditures per student-year (F ÷ C)[a]	3.7	2.4	3.3
H.	Gross National Product in constant dollars	3.5	4.2	4.2
I.	Ratio: F ÷ H	1.8	2.6	1.8

[a]Rates are multiplied or divided after converting to the form 1 + r/100.

[b]Full-time equivalent professional staff.

[c]Salaries, material, and current capital consumption; adjusted for price-level changes.

[d]Shows required increase in resources (F) if population growth of the sixties (A) alone were considered, meaning no change in average student-years completed per college-age person (B), and no change in staff units used per student year (D).

SOURCE: Line A: U.S. Bureau of the Census, Current Population Reports.

Line B, E, and G calculated as shown.

Lines C, D, and F: Center for Educational Statistics, U.S. Office of Education and O'Neill, June, Resource Use in Higher Education, Carnegie Commission on Higher Education, 1971.

staff-student ratios and by reduced rates of growth in expenditures per student (Line G).

Regarding those staff-student ratios and the reduction in expenditures per student, two comments are in order.

First, they were achieved primarily by the very great growth during the 'sixties of two-year community or junior colleges, and only secondarily by significant reductions in staff-student ratios at many existing four-year colleges and universities. The structural change this growth of two-year institutions implies in the system of post-secondary education is of major importance. Moreover, it presumably has limits. There is great doubt whether further reductions in staff-student ratios can be similarly achieved in the 1970's primarily by expansion of two-year schools; instead, further curtailment of available resources almost certainly would require additional and major reductions in the staff-student ratios at four-year colleges and universities. Further expansion of two-year colleges, to the extent that their growth draws from freshman and sophomore enrollments at four-year colleges and universities, will cause aggravated financial difficulties for the latter, by taking from them a relatively low-cost segment, which for a great many schools "subsidizes" upper division and graduate school. That is, excessive growth of two-year schools adds to the burdens of the existing four-year institutions. It not only diminishes the demand for low-cost high-revenue services, but it also subsequently increases the demand for high-cost upper-division and graduate instruction, by simply shifting the locus of large-class, "mass" operations and reducing the price of lower division instruction to students. There is no convincing evidence that lower division instruction costs any less at a two-year college than at a four-year college or university. The only clear difference between the two in this respect is that students generally pay less for that

service.* Thus, the growth of the two-year college perhaps has postponed the full fiscal consequences of rising enrollment, but it is unlikely to prove a permanent solution as an increasing number of students seek to move on to higher levels.

The second comment concerns the relationship between staff-student ratios and the economic concept of "productivity." Since productivity is defined as the ratio of output to input, many would take line D in Table I (average number of staff units used per student-year, which we have been calling the "staff-student ratio") to be a measure of productivity. Whether this usage is proper hinges on whether student-years produced is a measure of "output." Our view is that it is not. We would be willing to bypass all the difficult conceptual problems in measuring the "quantity of education," and accept student-years completed as a proxy measure for the output of the system, on the single condition that nothing else which is essential or significant changes. That is, <u>other things being equal</u>, an increase in student-years completed is an increase in the output of the system. But increases in student-years completed which come about <u>precisely because of</u> other changes of educational significance cannot be said necessarily to be an increase in the output of the system. (Any reader can conjure up in his mind more than one way of drastically cutting staff-student ratios--trimming courses, standardizing curricula, or even abolishing residential colleges in favor of nationwide instructional television--without increasing what he would consider to be the "output" of the system.) A fair analogy is the system of planned plant output targets in the U.S.S.R. under Stalin; since output specifications were in units (pairs of shoes, tons of steel, etc.), with quality parameters inadequately spelled out, the successful manager frequently was one who produced great

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* He probably pays less and gets less. There are economies of scale in the operation of four-year colleges and universities which do not show up in quantitative data. As an example, a 1,000,000-volume library is not the same as four 250,000-volume libraries, and the research, audio-visual, gymnasium, etc., facilities available on a 12,000-student campus will typically be superior, for <u>each</u> student, than are available on a 1,000-student campus.

volumes of second-rate merchandise. If line D represents a measure of "productivity," then "productivity" was high in these Soviet factories as well.

Another perspective on the problems of the nineteen-sixties can be gleaned from an inspection of column (3) in Table I. This is a wholly hypothetical computation, which shows that the need for additional resources would have grown at a rate of 7.6%, had there been no increase in the rate of college attendance (line B) and no change in staff-student ratios (line D). The only assumptions required are the true increase in population (line A), and an increase in average expenditure per staff unit which approximates the growth in median family income in the United States during the same period, 3.3% in constant dollars (line E).

Lines H and I of Table I offer a comparison of the rates of growth in total resources used in higher education and total resources available as measured by Gross National Product. Note that during the 1950's current expenditures on higher education increased by 1.8% for each 1.0% increase in Gross National Product (line I). During the 1960's, however, current expenditures for higher education increased 2.6% for each 1.0% increase in Gross National Product. This rather dramatic demand for a significantly greater share of available resources for higher education created a financial crisis of major proportions.

Again, additional insight can be gained from the hypothetical calculations shown in column (3) of Table I. Had there been no increase in the rate of college attendance (line B) and no change in staff-student ratios (line D), then our historical sources, methods, and priorities for financing higher education would have served as well during the 1960's as the 1950's. But that was not the case.

There is considerable doubt as to whether any of the three

ways of "paying for" the growth in the system in the '60's--low rates of growth in expenditures per student, a decline in the staff-student ratio, and an unprecedented growth in real resources used--can be sustained in the 1970's, a point to which we will later return.

Two major fundamental causes of the financial difficulties of the 'sixties need special attention. The first can be dealt with briefly; the second requires several paragraphs.

The first is this: The resources society is willing to allocate to the educational process are related to the growth of aggregate income. The need for such resources is related to the size of appropriate age cohorts. And the growth in income is simply not coincidental with the growth in these age cohorts.

The second fundamental cause is easily stated but is more difficult to put in perspective because it is truly unique to our present age. It has never happened before and will never occur again. It is this: During the 1950's our system of secondary schools reached a state of maturity as the proportion of each generation served approached its upper limit. The problem was, then, how to shift a larger share of increments in total educational budgets from the secondary level to the post-secondary level. For if growth in the average overall educational attainment of the population was to continue to rise, higher education had little choice but to change its methods and structure to accommodate students from lower income families whose prior experience, values, and aspirations were often significantly different from those of the student population the system served in the past.

Altering the share of increments to total educational budgets allocated to colleges and universities is more easily said than done. The units of government, the decision-making process, and the specific taxes used are all different. But the chief problem

involves the change in the makeup of the college population just mentioned.

This shift needs to be put in perspective. For fifty years, the higher education system grew in size at about the same rate as the secondary system. Moreover, the 54% of high school graduates who entered college, and the 29% of high school graduates who finished college, were by and large homogeneous with respect to family income and social status. For roughly 30 years, from 1920 to 1940, higher education addressed the task of broadening its curriculum at a sufficient rate to accommodate increased numbers from the middle-income groups and to keep pace with technical, scientific, humanistic, and artistic changes taking place in the rest of the world.

But when the growth in the proportion of each generation finishing high school began to reach its upper limit, and higher education faced the prospect of large numbers of low-income applicants, it had to make some hard choices. It had two main options. It either had to continuously raise entrance standards and/or the price to students, in order to maintain stability in the proportion of high school graduates it served; or it had to change its methods and structure to accommodate students from lower income families.

During the 1960's, higher education seemed to try to do both. The decade saw unprecedented increases in tuition and fees, and dramatic upward shifts in many schools' entrance standards--but also precedent-setting programs of student financial aid, the creation of full-blown state operated campuses where none had previously existed, the growth of the community college, and, in some cases, the nearly complete abolition of any entrance requirements at all.

This appearance of near schizophrenia, however, did not stem from a failure to choose decisively between the options. Only the second option--that of opening our system of post-secondary education to groups never before served--was consistent with continued

growth in the average level of educational attainment. Moreover, such continued growth was implied by and probably necessary to maintaining the growth in aggregate and per capita income.

Though a large number of institutions chose the first option, the system chose the second. As one consequence, the system could continue to serve an increasingly large, mass clientele at the same time that the stewards of the system--trustees, regents, administrators, and faculty--could proudly boast that their own individual institutions were climbing in status: teachers' colleges becoming multidivisional colleges, state colleges and agricultural and technical institutes becoming universities, universities expanding their graduate divisions, etc., etc. This combination of rapid expansion and rapid status improvement was only possible through creation of wholly new institutions at the bottom of the pyramid. (As a by-product, the status gains created a "revolution of rising expectations" among many a faculty member and administrator, whose assumption that their institution will continue in the 'seventies to add doctoral programs, cut teaching loads, and otherwise "progress," will make more difficult the financial problems of the coming decade.)

The consequence of the system electing the second option is the annual 4.1% growth rate in average student-years completed per college-age person, found on line B in Table I. This sudden jolt, combined with the population factor, produced a strain on our traditional techniques of financing education which was simply too great. We estimate that this 4.1% rate of growth was two-thirds larger than a rate which can be accounted for by growth in median family income alone.

Two other elements are necessary to complete the picture of the financial crisis in higher education: the recent decline in externally-funded research, particularly from the federal government, and the effects of the recession of 1970-71.

Table II shows the recent history of federal obligations to

TABLE II

Federal Obligations to Universities and Colleges, and Research and Development Component, Constant 1969-70 Dollars, 1965-70 (Fiscal Years)

(Millions of dollars)

	1965	1966	1967	1968	1969	1970
Federal obligations to Univ. and Coll.[a]	2,777	3,545	3,792	3,738	3,646	3,226
Annual percentage increase	39.6	27.6	6.9	−1.5	−2.5	−11.6
R & D in above Federal obligations[b]	1,319	1,474	1,516	1,574	1,578	1,464
Annual percentage increase	10.6	11.7	2.8	3.8	0.2	− 7.3

[a]Obligations differ from expenditures in timing, in that funds may not be obliged and spent in the same year

[b]Excludes plant and non-science purposes.

SOURCE: National Science Foundation. Deflated by Consumer Price Index.

universities and colleges, and the research and development component, in real or deflated terms. Note that the former has been decreasing since 1969 and the latter since 1970, and that the rates of growth of both began to decline even earlier. These decreases have added to the problems of those institutions in which such research funds have been concentrated.

There is some confusion over the financial implications of these research funds. There are those who appear to equate research funds with institutional aid. This would be correct, of course, only if such funds were granted with no requirement that any research in fact be done, or institutional resources committed. This is obviously not the case. Some research grants help with instructional programs, particularly at the graduate level, by providing research assistantships to finance graduate students, by helping t assemble a nucleus of scholars in an area, by educating or re-educating scholars in a particular field, and by increasing the library and other material resources. But these are undependable, by-product effects. The fact remains that research grants involve a commitment of resources and are not a form of aid.

While that may be true, it is also true that reductions in aid may amount, in effect, to <u>negative aid</u>. This lack of symmetry between increases and reductions in research funds reflects the fact that the institution may be required to pick up, for a period of time, the costs of faculty and other resources formerly financed through outside funds. For instance, tenure or adequate-notice rules may make it impossible to or may delay releasing faculty. In other cases, a research contract may be cancelled which helps finance a scholar around whom a graduate instructional program has grown up. Such instructional developments are not easily reversed.

If enough time elapses, of course, rationalizing adjustments can occur--if administrators are confident that the research cutbacks are permanent.

The rapid growth of external research funds in the 1950's and, particularly, the 1960's, led to an investment in resources which is not easily liquidated or reversed. Universities and colleges may have been unwise in making such investments (though that did not seem to be the case at the time), but others should share responsibility for the consequences. As another Center publication comments,

> . . . In the post-war years, institutions of higher education have increasingly served as auxiliary research wings of corporations and government. Until 1969-1970 the relationship was one of mutual benefit. The institutions of higher education served, in effect, as the "Kelly Girls" of the research area. They provided an elastic supply of highly trained and well equipped research talent which became available almost on demand. However, unlike an in-house research department, these research "wings" did not represent a fixed cost in terms of facilities, salaries, and fringe benefits. That is, when no longer needed, academic researchers could be dispensed with fairly easily. In effect, considerable business and budget risk was shifted from government and industry to academic institutions.*

The effects of the business cycle on institutions of higher learning have always been somewhat unclear, particularly those concerning enrollment. More clear are reductions in the growth of, or outright reductions in, externally-funded research, as just mentioned, and in state and local government resources. Surpluses of some types of educated manpower, in part explained by the recession, have dampened enthusiasm of prospective students and outside sponsors alike, and help explain the current crisis. Finally, private institutions face special problems arising out of the cyclically-sensitive nature of contributed funds.

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* Laurence B. DeWitt and A. Dale Tussing, The Supply and Demand for Graduates of Higher Education: 1970 to 1980, Research Report RR-8, Educational Policy Research Center at Syracuse, December 1971.

B. The 'Seventies and Beyond

What would Table I look like for the 1970's, 1980's and 1990's? An effort to determine the answer is found in Table III.

Of the seven growth rates found on lines A through G, only one is a reasonably "hard," known number, namely, the college-age population (line A). As is shown in Table III, this age cohort will grow at the reduced rate of 2.3% per annum between 1970 and 1975; 1.9% between 1970 and 1980; only 1.0% between 1970 and 1985; and it collapses to 0.1% when the 1970-1990 period is considered. Clearly, this factor will decreasingly be a source of difficulty the longer the time period considered.

What about the other main source of difficulty, the average student-years completed per person of college age (line B)? Here we have to make some assumptions, and the assumptions involve, in part, policy decisions.

For each target year in Table III, three alternative outcomes, (a), (b), and (c), are presented, each with different assumptions, as follows.

(a) Stable system. It is assumed under (a) that average student-years completed per person of college age (line B) will expand at gradually declining rates between 2.7% and 2.2% per year

TABLE III

Average Rates of Growth From 1970 To Target Date (Fiscal Year)
Required for Three Alternative Conditions
All Institutions of Higher Education

(In Percent Per Year)

	Target 1975			Target 1980			Target 1985			Target 1990		
	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
A. Number of persons age 18-24	2.3	2.3	2.3	1.9	1.9	1.9	1.0	1.0	1.0	0.1	0.1	0.1
B. Average student-years completed per person 18-24	2.7	3.8	5.3	2.5	3.6	5.2	2.3	3.5	5.0	2.2	3.4	4.6
C. Number of student-years produced (A and B combined)[a]	5.1	6.2	7.8	4.4	5.6	7.3	3.4	4.6	6.1	2.3	3.5	4.8
D. Average number of staff units[b] used per student-year	0.0	2.0	0.6	0.0	1.0	0.6	0.0	0.6	0.6	0.0	0.5	0.5
E. Average constant-dollar expenditure[c] per staff unit	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
F. Total constant-dollar current resources used (C,D, and E combined)[a]	8.8	12.1	12.2	8.0	10.4	11.7	7.0	8.9	10.4	5.9	7.6	9.0
G. Average constant-dollar expenditures per student-year (F ÷ C)[a]	3.5	5.5	4.0	3.5	4.5	4.1	3.5	4.1	4.1	3.5	3.9	4.0

[a]Rates are multiplied or divided after converting to the form 1 + r/100.

[b]Full-time equivalent professional staff

[c]Salaries, material, and current capital consumption; adjusted for price-level changes.

SOURCE: Line A: U.S. Bureau of the Census, Current Population Reports, Series P-25, No. 448, Series D.
Lines B, D, and E: As described in text below and footnotes 1 and 2. Basic material from U.S. Office of Education, National Center for Educational Statistics.
Lines C, F, and G: Calculated as shown.

throughout the period (through 1990).* This assumption when combined with the population projections of line A, produces continued rapid growth in the number of student-years completed (line C) during the 1970's. Enrollment grows at the rate of 5.1% through 1975, and 4.4% through 1980. But between 1970 and 1990, the rate is only 2.3%.

The "stable system" outcome also assumes that the decline in the average staff-student ratio during the 1960's is permanent; that the percentage of future age cohorts completing 4-year programs will grow at modest rates consistent with growth in real incomes, but will remain unaffected by the creation of new post-secondary opportunities of less than 4 years duration during the 1960's. No further change in the average staff-student ratio (line D) will occur. Finally, all three alternatives assume that expenditures per staff member (line E) will rise at a rate equivalent to the expected rate of increase in median family income (3.5%).

Lines F, total dollar resources used, and G, average expenditures per student, do not present predictions or assumptions; rather, they present the only outcome consistent with lines A through E. If one accepts the assumptions spelled out above, for instance, then there must be a 8.8% annual increase in funds (in real terms) provided for higher education, between 1970 and 1975. We do not examine

* The assumption of rates of growth for line B represents our prediction of what would occur: if 1) the institutional structure and scope of post-secondary instruction, i.e., the present objectives of instruction and who institutions serve, remained unchanged; and if 2) the relative price effect of policies on tuition, student aid, and location remained unchanged; and if 3) the long-run relationship between income and the demand for instruction (elasticity) remained unchanged; and if 4) real median family income continued to increase at its long-run historical rate of approximately 3.5% per year. We doubt that either conditions 1) or 2) above are practical possibilities. The institutional structure, scope, and effective price of post-secondary instruction are currently undergoing significant change. Although conditions 3) and 4) above are problematic, they are practical possibilities.

the question of whether that rate will in fact occur. Note that, even under conditions of a stable system, rapid increases in funds are required. Even when the target date is 1990, constant dollar resources must increase at an annual rate of 5.9%, implying a doubling every 12 years.

(b) Transition system. Where "stable system" maintains, in effect, the institutional structure of 1970, "transition system" assumes that the rapid growth in new educational programs of less than 4-years duration during the 1960's will produce a subsequent additional demand for new as well as traditional programs of 4-years or more in the future. Student-years completed per person of college age (line B) would grow at a gradually diminishing annual rate of from 3.8% to 3.4% through 1990. But the average staff-student ratio (line D) would be restored, by the target year, to its 1960 level as a result of an increasing demand for more advanced instruction relative to basic instruction.

The resources required for a transition system, as defined, are considerable. To achieve these conditions by 1975 would require annual increases in funds of 12.1%, probably unattainable. To do so by 1985 (8.9% annual increase in funds) or by 1990 (7.6%) is more nearly within our grasp.

(c) Maximum growth conditions. "Maximum growth" is a variant of "transition system" with everything the same except for three crucial points. It is assumed that a comprehensive system of post-secondary education exists which is non-selective (has "open enrollment") in admissions; that tuition is free, at least where positive tuition would be a barrier to entry; and that prospective students view what the system has to offer as worth the time they will devote to it.*

* The assumptions resulting in the growth rates shown on line B under conditions of maximum growth (variant c) represent our prediction of what would occur: if 1) the scope of post-secondary instruction was broadened sufficiently to interest those who are presently either

These assumptions show up in line B under the columns headed (c) in the form of rapid increases in the fraction of the college-age population attending a wide variety of post-secondary institutions. Note, however, that this rate of increase tapers off over time.

We do not believe that these maximum rates are practical possibilities for target years earlier than 1985 or 1990. However, once any of these targets was reached, the rate of growth for line B would thereafter primarily be influenced by the rate of growth in median family income. Given the assumptions as stated, the rate for line B would then fall to approximately 2.5% per year.

Line C, then, shows under the "maximum growth" column what we believe to be the limit, the maximum possible expansion of enrollment under the most extreme circumstances. While a 7.3% per year increase between 1970 and 1980 represents slightly more than a doubling of enrollment, it remains below the 8.5% per year growth accommodated during the 1960's.

Note that alternatives (b) and (c) are very similar in total cost through 1975. For target years beyond 1975, conditions of maximum growth would require about 1.5% per year more in total

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disenchanted or ill-prepared or who pursue specialized educational objectives outside the present system; and if 2) the effective price of post-secondary instruction to students was reduced to zero, at least where a positive price would act as a barrier to instruction; and if 3) the long-run relationship between income and the demand for instruction (elasticity) remained unchanged; and if 4) real median family income continued to increase at its long-run historical rate of approximately 3.5% per year. It should be pointed out that to achieve condition 1) above would present the educational community with a monumental task. We believe that condition 1) can be achieved only through a long period of experimentation, trial, and error. If financial constraints were removed today and work begun, we doubt that the maximum rate of growth shown on line B would be achieved much before 1985, or even possibly 1990. Conditions 2) through 4) above, however, are currently practical possibilities.

resources than the transition system alternative. The differences between the two alternatives rest with different assumptions about change in the number of students accommodated and the average staff-student ratio. Alternative (b) assumes fewer students and a return of the average staff-student ratio to its 1960 level by the target year. Alternative (c) assumes more rapid increases in the number of students and a slower increase in the staff-student ratio such that the 1960 level is reached only for target years 1985 and beyond. Whether such changes can be financed is another question. With the assumptions regarding resource use shown, maximum growth to a target year of 1990 would require annual increases in funds at a rate of 9.0% per year.

There is one other important distinction to be made among the three alternatives described. The conditions for all three alternatives are based upon the current statistical definitions of "institutions of higher education" as used by the U.S. Office of Education. The conditions for a stable system (columns a) and for a transition system (columns b) could occur without change in the types of institutions now included in that definition. However, the conditions for maximum growth (columns c) could occur only if the statistical definition is extended to encompass all institutional forms of post-secondary instruction. This means that the growth in total resources required as shown on line F for conditions of maximum growth (columns c) are deceptive. Some part of the needed resources for maximum growth would be "supplied" simply by a change in the statistical definition of instructional activity. For example, if, by any given target year, existing private profit-making schools at the post-secondary level were to be encompassed within the definition, then both the students and the resources such institutions command would be reflected in data for the target year but not so covered in data for the 1970 base year. Part of the conditions for maximum growth as shown in Table III would be "satisfied" without any genuine growth having occurred. Thus, it is entirely

possible that much of the difference between the requirements for a transition system and conditions for maximum growth as shown in Table III are illusory. Unfortunately, just how much of this difference is illusory remains unknown.

The combinations of assumed percentages to be found in Table III are not, of course, the only such combinations possible. The reader is invited to construct his own set of conditions. For example, one might easily believe that, were the open-enrollment, free-tuition model to come into being, restoration of 1960 staff-student ratios would be out of the question. He may wish to construct an outcome, then, with no change, or even further decline, in staff-student ratios and/or expenditures per staff member.

All that is required, to construct one's own outcome set, is to accept the Census Bureau figures for line A, number of persons aged 18-24; specify one's assumptions regarding percentage change in student-years completed per person of college age (line B); staff-student ratios (line D); and average expenditure per staff member (line E). The rate found on line C is the product of those on C, D, and E; and that on line G is the quotient of the rate on line F divided by the rate on line C.

Table III may appear to assume that expansion in higher education will take the form of continuing increases in the <u>time</u> spent in institutions of higher education by each person. Indeed, line B represents alternative estimates of the rate of growth in time per person. But suppose the system expands instead through increasing the <u>intensity</u> or <u>quality</u> during a <u>given</u> time period. Would that invalidate Table III? We think not. We see no reason to assume that the resource implications of increased intensity, time held constant, should be different from the resource implications of increased time, intensity held constant. Resource use probably would differ between the two cases, but since it is not clear which of them would imply greater costs, there is no basis

for treating them as different. A change in intensity or quality most certainly would require some related change in the values assigned to either line D or E or both. Again, the reader is free to make his own assumptions and discover their implications for resource requirements.

C. The Crisis

Earlier, it was remarked that there is considerable doubt as to whether any of the three ways of "paying for" the growth in the system in the '60's--low rates of growth of expenditures per student, a decline in the staff-student ratio, and an unprecedented growth in real resources used--can be sustained in the 1970's.

There is doubt that expenditures per staff member can grow less rapidly than average incomes generally because of the seeming inexorability of "Baumol's Disease," the phenomenon, discussed in other Center research papers,* of continually rising prices in the service sector, relative to the average of all prices. This tendency of prices to rise is, in turn, the product of rising income payments to those in the service sector, whose pay must rise at about the same pace as median family income, and of the difficulty in reducing the professional labor component in the service sector without consequent reductions in quality of output, as compared with manufacturing, mining, agriculture, etc.**

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* See John A. Henning and A. Dale Tussing, "The U.S. Economy Through 2000: Forecasts of Major Macroeconomic Variables," 1971; "Long-Run Growth of Non-Defense Government Expenditures in the United States," 1970; and "The U.S. Economy Through 2000 A.D., Progress Report," 1969, all EPRC Working Drafts. See also Henning and Tussing, "Baumol's Disease: A Closer Look at Unbalanced Growth," forthcoming.

** We hold that productivity in the learning process has and does increase at significant rates but is not necessarily accompanied by a decline in the number of instructors used per student. A more appropriate analogy than manufacturing or agriculture would be the growth in the use of information specialists in business

There is doubt that staff-student ratios can decline further, at least without important qualitative and structural changes in the system of higher education, changes which must not be considered or, without consideration accepted, on financial grounds alone, and which should be examined for their educational and social implications.

There is doubt, finally, that there is capacity and willingness sufficiently widespread through the system of higher education for private and public institutions to increase funds--and note that we are talking about real resources--at the rate of at least 8.0% per year during the 1970's, though our analysis suggests that a good deal more than that will be required. One perspective which argues that this much--and more--should be available, is offered below, in a subsequent section.

Difficulty in finding new sources and methods for raising these funds would constitute the financial crisis in higher education in the 1970's. Without the required funds, one or more of the following is necessarily implied: (1) Insufficient increase in college attendance rate (line B in Tables I and III); unacceptable for social, racial, and economic reasons. (2) Decrease in staff-student ratio (line D); unacceptable for structural, social, and educational reasons, as already discussed. (3) Insufficient increase in real expenditure per staff member; probably impossible, as discussed, and to the extent possible, probably undesirable, as it implies long-term deterioration in the capital stock (including human) of higher education institutions. Since one or more of the three is necessarily implied by a failure to raise sufficient funds, then the issue of whether a financial crisis exists in higher education

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and government. The productivity of information specialists has increased dramatically in recent years through the use of electronic systems and the use of analytic methods of increasing power. We would be very surprised, however, to learn that the number of such specialists per decision-maker in business and government has consequently declined.

comes down to whether one believes the funds will be available, and if they are not, whether one believes the three outcomes are undesirable.

D. The Resource Gap

The difference between available resources and needed resources is the "resource gap." There are a variety of ways of estimating what will be available. In this section, we calculate what we could afford, though whether we will make such an allocation of society's resources is another question.

Our procedure is as follows: First, assuming that the future relationship between increases in income and increases in resources for education at all levels will be the same as in the past, we estimate the rate of increase to be 5.5% per year, for reasons explained momentarily. We then compute the claim of primary and secondary education on those resources, and assume that the residual will be available for higher education. Finally, we compare this implied growth in higher education funds with what seems to be required, in order to estimate the gap.

Study after study has estimated the long-run income elasticity of the demand for education in America to be approximately 1.5% increase in aggregate educational expenditures. If GNP is assumed to grow in the future at a rate of 3.7% per year, educational expenditures should grow at about 5.5% per year.

To estimate the future use of the primary and secondary system, we follow in Table IV the same exercise as was followed in Table III for the higher education system.

As before, line A predicts the rate of growth of the size of the relevant age group, this time those 5-17 years, between

ERRATUM

The third paragraph of Section I-D, page 23, should read as follows:

Study after study has estimated the long-run income elasticity of the demand for education in America to be approximately 1.5. This means that every 1% increase in aggregate income (as measured by Gross National Product) is on the average associated with a 1.5% increase in aggregate educational expenditures. If GNP is assumed to grow in the future at a rate of 3.7% per year, educational expenditures should grow at about 5.5% per year.

1970 and each of four target years. This age group declines in size almost until the end of the century.

The growth rates of line B, number of student-years completed per person of school age, are based on two expected phenomena: a continuing reduction in the school drop-out rate, and an extension of the system into early childhood education (ECE). The school drop-out rate is expected to decline from its present level of about 20% to 17% by 1975, 14% by 1980, 11% by 1985, and 9% by 1990. This represents slower progress than was achieved during the 1960's, because of the maturation of the K-12 system, as discussed earlier.* The most rapid pre-school development is expected in the 1970-75 period. We have added approximately 0.4 years per person by 1975 to reflect this change (suggesting, e.g., that 40% will have one extra year of schooling). As before, line C is the product of the rates in lines A and B. Note that the size of the system declines throughout the 'seventies, and between 1970 and 1985 is constant.

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* This assumption of a slowing of progress in reducing the school drop-out rate requires some further explanation. It is unlikely that the drop-out rate can be reduced to zero in a very short time. For example, such an event probably would require a significant change in the distribution of income favoring low income groups as well as a broadening of the functions of the school to include new programs for the retarded and juvenile detention. Altering the distribution of income remains problematic . Neither programs for the retarded nor juvenile detention serve the purposes of a 12th grade education. Thus, reducing the drop-out rate from 20% to 10% will require more time than was the case for the reduction from 30% in 1960 to 20% in 1970. The real income of the poor will need to rise, the health of prospective mothers will need to improve, and desirable social attitudes among the young will need to become more extensive. The assumption that the next 10% reduction in the drop-out rate will require twice as long as the last such reduction is based upon a statistical analysis of the long-run rate of change in the distribution of educational attainment. (See James C. Byrnes, "The Quantity of Formal Instruction in the United States," Educational Policy Research Center, Syracuse, August 1970.) One may go further and argue that in the case of some more affluent but disenchanted youth a significant change in the process of schooling will be required if an increase in the drop-out rate is to be

The growth rates in line D, staff-student ratios, are based on the assumption that the absolute size of ECE-K-12 professional staff will not fall but will at least remain constant--an assumption which, together with falling enrollments, provides for an increase in staff-student ratios. Some increase is indicated, further, by a change in the structure of the system (ECE uses higher staff-student ratios, for instance, than either the primary or the secondary system).

Expenditure per staff member, line E, is expected to grow at the rate of 3.5%, the same as in Table II, for higher education, and for the same reasons.

The resulting resource requirements, as given in line F, are modest ones, suggesting no financial crisis in elementary and secondary education. Indeed, as is well known, the crisis, such as there is, is on the other side of the market equation--a growing teacher surplus. Line G shows that these assumptions, far from suggesting retrenchment, would make possible a greater rate of increase in real resources used per student in the primary and secondary system, through 1980, than at any time during the past 20 years. Comparable historical figures for line G of Table IV are 3.8% per year during the 1950's and 3.7% per year during the 1960's.

Table V compares rates of growth of resource needs in the primary-secondary system with the assumed 5.5% annual growth in total resources available. This assumed total growth is given on the first line; the resource needs in the primary-secondary system are carried over onto the second line from line F of Table IV. When the primary-secondary and the higher education components

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avoided during the next decade. Thus, the time required for a unit decrease in the drop-out rate may be expected to increase exponentially.

of the system are given appropriate weights, the rate of growth of money "left over" for the higher education system is provided in the third line. It is this third line that provides such optimistic results: growth in resources available to higher education at a rate of 12.5% through 1975, and over 10% through the decade.

To put these forecast results in perspective, we combine, in Table VI, the last line from Table V (resources available to higher education), with the growth rates in resources necessary for the three specified outcomes--stable system, transition system and maximum growth, all from line F, Table III.

A comparison of the residual with the needs implied by the three outcomes suggests the following. The projected rate of annual growth in resources for higher education, nearly 10%, between 1970 and 1985, indicates the possibility of accommodating a transition system with continued progress toward an open system short of maximum growth. Between now and 1990, all higher education could progress toward a condition of maximum growth, even with a move toward something like open enrollment.

These projections of resource growth in higher education do not constitute forecasts, it will be recalled, but rather estimates of what we could do should we make the difficult decisions and adjustments required. Take note of the crucial assumptions. It is assumed that there is a tendency of American society to provide funds for education, independently of the allocation among levels. Then the end of the crisis described above is predicated on what amounts to a rise in the proportion of incremental funds allocated to higher education. Even though such a shift is not inconsistent with generous increases in expenditures per student at lower levels, it is not clear how that shift will or can take place, particularly when the role of all types of institutions (e.g., privately-endowed institutions of higher education) is considered. Moreover, it is assumed that tax funds for education

TABLE IV

Average Rates of Growth from 1970 to Target Dates (Fiscal Year)

All Elementary and Secondary Institutions

(In Percent Per Year)

		Target 1975	Target 1980	Target 1985	Target 1990
A.	Number of persons age 5-17	–0.8	–0.8	–0.4	0.1
B.	Average student-years completed per person 5-17	0.7	0.6	0.4	0.3
C.	Number of student-years completed (A and B combined)[a]	–0.1	–0.2	0.0	0.4
D.	Average number of staff units[b] used per student-year	0.0	0.6	0.4	0.3
E.	Average constant-dollar expenditure[c] per staff unit	3.5	3.5	3.5	3.5
F.	Total constant-dollar current resources used (C, D, and E combined)[a]	3.4	3.9	3.9	4.2
G.	Average constant dollar expenditures per student (F ÷ C)[a]	3.5	4.1	3.9	3.8

[a]Rates are multiplied or divided after converting to the form 1 + r/100.

[b]Full-time equivalent professional staff.

[c]Salaries, material, and current capital consumption; adjusted for price-level changes.

SOURCES: Line A: U.S. Bureau of the Census, Current Population Reports, Series P–25, No. 448, Series D.

Lines B, D, and E: As described in text below. Basic material from U.S. Office of Education, National Center for Educational Statistics.

Lines C, F, and G: Calculated as shown.

will be no harder to raise in the future than in the past--an assumption which stands in some doubt.

The difficulty is illustrated when we consider the income elasticity, not of aggregate education, but of higher education alone. Studies have also indicated this long-run elasticity to approximate 1.5, implying a growth rate of these funds at the rate of 5.5% per year (although the relationship did not hold during the 1950's when this elasticity rose to 1.8 nor during the 1960's when it rose to 2.6). When 5.5% is compared with the rates required for maximum growth, a transition system or even a stable system in Table V, it is less than any of them, for any target year. This history has not been overlooked in the calculation of Table V. Due to the maturation of the primary and secondary system this long-run elasticity can no longer hold unless we decide to reduce the rate of growth in the level of educational attainment in American society or unless we decide to reduce the average staff-student ratio by unprecedented rates. Some degree of shift in the allocation of incremental resources for education as illustrated in Table V will be otherwise required. This perspective points to a painful adjustment process. The adjustment process may be said to constitute a crisis by standard definitions of that term.

II.

The Federal Responsibility

Whether a crisis is genuinely upon systems of higher education is one thing; it is quite another to conclude that substantial federal aid is required or justified. And a justification of substantial federal aid does not, in and of itself, suggest either the proper amount or the proper form of such aid. To those three questions we now turn: whether a federal role is implied; how much aid is appropriate; and what form it should take.

TABLE V

Projected Maximum Average Rates of Growth in Aggregate Constant-Dollar Educational Expenditures From 1970 to Target Dates (Fiscal Year)

(In Percent Per Year)

	1970 Expenditure Weights[a]	Target 1975	Target 1980	Target 1985	Target 1990
Total, all formal education (primary, secondary, and higher)	1.0	5.5	5.5	5.5	5.5
All elementary and secondary institutions (from Table III)	0.8	3.4	3.9	3.9	4.2
All institutions of higher education (residual)	0.2	12.5	10.4	9.8	8.8

[a]Technical note: The expenditure weights apply to the underlying growth ratios consistent with the average rates shown.

TABLE VI

Alternative Average Rates of Growth of Resources from 1970 to Target Dates (Fiscal Year, and Residual Available Rates) All Institutions of Higher Education

(In Percent Per Year)

	Target 1975	Target 1980	Target 1985	Target 1990
(a) Stable System	8.8	8.0	7.0	5.9
(b) Transition System	12.1	10.4	8.9	7.6
(c) Maximum Growth	12.2	11.7	10.4	9.0
Residual Available	12.5	10.4	9.8	8.8

SOURCE: Lines (a), (b), and (c) are taken from line F, Table II. "Residual available" is taken from 3rd line, Table IV.

A. The Federal Involvement

The question of the relative authority and responsibility of private and public sectors in a mixed economy, and of state and federal governments in an evolving federalism, are political and philosophical questions which could fill several reports the length of the present one, and in fact whole volumes. In the short space devoted here, we cannot expect to be convincing, but can only indicate the premises upon which our policy recommendations are built. And since we focus only on the financing of education, and do not explicitly compare expenditures in that area with any other type of expenditure, public or private, we make no judgments about where aid of the kind discussed fits in a system of national priorities. The discussion to follow concerns not the demand for post-secondary education, but a consideration of what kind of a good it is, public or private, federal or state; and if and to the extent it is federal, what federal financing techniques could be suggested.

There are two questions at issue: whether the benefits arising out of the educational process are essentially social and public, or whether they are essentially personal and private; and, if and to the extent that they are social, whether they are essentially local or regional, or whether they are essentially general or national.

It is safe to say that there are both private and public elements, and both local and national aspects of the public elements, in almost any educational process. To justify a significant federal involvement requires a significant degree of public and national concern and benefit. A test of publicness and nationalness is needed.

An educational activity should be a candidate for public funding if and to the extent that it (1) creates non-exclusive capacities; (2) provides for equal access; and (3) is publicly accountable.

By creating non-exclusive capacities is meant that the educational process is designed to produce a learning activity which creates capacities in learners which are appropriate to more than a limited set of non-public institutions (a particular corporation, for instance, or a particular sectarian religion). Thus the training of "GM Factory-Trained Hydramatic Mechanics" would be excluded, as would training of Catholic priests. But R.O.T.C. training of military officers would not be excluded, as the military services are public organizations. The training of accountants, mechanics, and historians would not be excluded, because that training is appropriate to a wide range of institutional users. By providing for equal access is meant that participation in educational activity would be limited only by the motivation of individuals to perform the required educational tasks, and by their ability to meet minimum standards applicable to all participants. By public accountability is meant that the minimum standards and tasks required for such activities are established in advance by persons who are accountable to the general public interest.

The equal access criterion is particularly critical. There is some evidence that inequality in the distribution of educational benefits aggravates racial and economic inequality; and there is some basis for believing that disadvantaged groups suffer as a consequence. It does not seem proper to provide Federal aid--whether to students or institutions--if that aid is not at least neutral with respect to effects on class and income distribution. Simply adding a dimension of Federal aid to the existing higher educational system would not be neutral in this sense. Consequently, a condition of Federal aid should be a degree of opening up of the system.

If all three tests are reasonably met, no individual or private organization could retain a purely private advantage for long as a result of the educational process. And there would be no reasonable grounds for expecting individual students to bear the full financial cost of such a system.

It should be clear that so-called "private" non-sectarian institutions of higher education may meet these tests as easily as so-called "public" institutions. They serve public interests, according to the three criteria, in a way indistinguishable from public institutions.

Assuming an educational activity is of public value, is there in it a national interest, justifying the application of federally-raised tax revenues? To deal with that question, let us employ the following test. At any level of government--local, state, national--should the public interest require a certain level of educational attainment, is it economic for that level of government to provide it?

The meaning of the test is clarified by looking at the two extremes of primary and graduate-level education. Suppose a city determines that it has a public interest in a certain number of Ph.D. holders in a particular field--psychology, for instance. Is it economic for the city to finance a graduate school in psychology? Probably not; the number of psychology Ph.D.'s available to the city will bear almost no relationship to the number graduated from a city-financed graduate school. At the state level, there is a relationship, but probably a weak one, depending upon the size of the state and the mobility of professional psychologists. At the national level, the relationship is not only strong, it is almost perfect. At the other extreme, if the city wanted to assure itself that its people had basic literacy and related skills, it would find that a failure to provide basic primary education would vitally influence that outcome. A system of elementary schools

is economic, even though providing elementary education inevitably provides other communities with some literate population.

Two general observations based on this test are appropriate. First, there is a crude relationship that, as the number of years involved in the process rises (i.e., as one moves from primary to secondary to post-secondary, to post-graduate), so does the degree of nationalness of the outcome. This reflects increased mobility of those with higher educational attainment. And second, there has been a persistent rise in the nationalness of <u>all</u> levels of the educational process, reflecting the increasing mobility of the American people.

Mobility is not, of course, the only determinant of nationalness. There are benefits--economic, social, and civic--to people in North Dakota when residents of Pennsylvania are educated, and vice versa. These national externalities apply to elementary and secondary education, as well as to post-secondary.

B. <u>The Form of Federal Aid to Higher Education</u>

The principal policy questions may be formulated as follows. Should there be any distinction or discrimination between public and private institutions? Or, more generally, what organizational and other criteria should be established for eligibility for aid? Should aid take the form of student or institutional aid, or some combination? Should student aid, if any, take account of variations in need? And should either institutional or student aid vary according to regional or (within institutions) subject-matter cost differences?

<u>Public-private</u>. As noted, there is little if any correspondence between the publicness of the <u>outcome</u> of the educational process and the publicness of the ownership of the assets of educational institutions. We will go further. We are inclined to

agree with others that the long-run trend toward larger and larger state systems, which of necessity involves a high degree of centralization of control, has created conditions which impede the flexibility and responsiveness necessary for effective and efficient allocation of resources to the teaching-learning process. The collapse of private institutions, or their inclusion in state organizations (as in University of Buffalo, Rutgers, and others) would reinforce these undesirable trends. Moreover, private institutions are able to attract donated and tuition resources which would not be available to public institutions, and consequently account for a greater total of resources available to all institutions. Ways should be found to strengthen the financial resources of the private institutions, so long as they meet the tests of non-exclusivity, access, and public accountability.

Eligibility criteria. It follows that the publicness of the ownership of assets is not an appropriate criterion for eligibility. We propose instead a set of criteria which may require, here and there, not only private but also public institutions to modify somewhat their structures. The following tests would be applied.

1) Is the institution chartered as a non-profit organization for educational and cultural purposes by some level of government--federal, state, county, or locality?

2) Are its officers responsible to a lay Board of Trustees selected to represent the public interest?

3) Does it make full disclosure of all sources and disbursements of funds?

4) Does it make no restrictions upon participation in any of its activities on grounds of race, religious conviction, sex, age, or place of residence?

5) Does it publish correct and complete schedules of all educational and cultural activities in advance of performance with reasonable information on content and prior levels of experience recommended or required?

6) Wherever courses or curricula of instruction are clearly and fully described and scheduled in advance, does it issue (on request of individual participants) a transcript

> recording the amount and character of activities undertaken, together with an evaluation of performance, and the name, address, and qualifications of instructors?

Adoption of these criteria would make federal aid available to a wide range of post-secondary institutions outside the degree-granting core. They would make it possible, and would probably even encourage, the organization of wholly new educational institutions, whenever existing ones do not meet either one of two market tests: when they are overcharging, in tuition terms, or when they are not responsive to educational needs (whether in terms of method or in terms of content). Federal aid would become available not only to existing colleges and universities, but in many cases to drama workshops, local symphony orchestras, museums, libraries, trade unions, and others, on the basis of their educational activities. The only large group of peripheral post-secondary institutions deliberately excluded are the for-profit proprietary institutions.

These are excluded because combining private profitability with subsidy presents enormous policing and philosophical difficulties. While there is substantial precedent for federal subsidy of for-profit private organizations (airlines, merchant fleet, etc.), in none of them is there such a potential community of interest between potential fraudulent students and fraudulent institutions. Exclusion from general federal aid would not wipe out proprietary institutions, which would still have a range of functions and opportunities, though it would certainly make it difficult for them to operate in some of their present fields, since subsidized non-profit post-secondary institutions would compete with them. Presumably a number of proprietaries would seek to convert their charters to not-for-profit form in order to be eligible for assistance.

Student vs. institutional aid. A new federal program either entirely of student aid or entirely of institutional aid would

have undesirable consequences. If tuition rates are to pay a large and increasing share of educational costs, and if these rates are to be subsidized, then student control over the educational process may rise beyond the optimum level. If students are to influence the relative growth of different institutions and, within institutions, of different programs, according to how they spend their subsidized tuition, the degree of publicness of these institutions is lessened. On the other hand, a significant student influence of this kind is important, and should be encouraged, in order to avoid institutional dominance and possible organizational rigidity. That is, students must have some way of indicating their dissatisfaction with the inflexibility of organized higher education, short of mass demonstration, coercion, or terrorism.

Need. Since we are urging some combination of institutional and student aid, the next appropriate question is, should student aid vary on account of differences in need? The "purist" answer, we contend, is that aid should vary according to ex post need. Take, for example, a person who has limited means, receives a higher education, and then becomes outstandingly successful and affluent. Another person, with modest though not inadequate means, receives a higher education. But his subsequent income is also modest, far from outstanding. Divorcing the question of the degree of aid from the question of financing (in the banking or credit sense) of one's education, the latter should be aided more than the former. The appropriate device for allocating aid according to post-education success is a variant of the deferred tuition scheme, to be discussed later, or some other technique which ties repayment or redistribution to lifelong income.

Cost variations. The final question concerns whether cost differences which arise either out of regional variation or out of the differences in cost of different disciplines or teaching techniques ought to influence either student or institutional aid.

Our answer to both questions is a qualified no. That something is more costly than something else is no necessary reason to buy it; typically, in both private and public behavior, the costliness of a product is an argument for not buying it. If education in a region or in some discipline is cheaper, let students flock to that region or discipline, thereby lowering the overall cost of higher education. If a more costly form of education is associated with a higher lifetime income, then let the student pay those higher costs, out of that higher income.

The only exceptions are where a more costly form of education is associated with a more socially beneficial but not a more privately remunerative outcome, and thus higher costs significantly act as disincentives to optimal enrollments. In cases where this means subsidizing a program or curriculum, the resulting program of categorical aid should not be part of (or thought of as part of) the institutional or student aid discussed here. Rather, it should be viewed as dealing with specific social and manpower objectives. In some cases, this may mean subsidizing higher-cost education in some regions (rather than disciplines), but only where this is necessary in order to maintain some geographical equity in the distribution of educational resources. That is, if high-cost regions prove to be deficient in educational resources, compared with the rest of the nation, which we do not believe to be the case, then some compensation of the higher cost is called for.

A suggested program. Application of our proposed answers to these policy questions suggests a program of aid to higher education which takes the following form.

1) Institutional grants. Grants to institutions should be based on the number of normalized credit-hours of student enrollments. Their purpose should be to assist all institutions up to a standard, minimum per-student expenditure. That is, suppose

$1,200 per full-time-equivalent student-year is chosen as the standard.* On a sharing or matching basis, all eligible institutions would be assisted in financing the first $1,200 per student-year. A few institutions which spend less than this amount presently would be assisted--and induced--to bring their expenditure up to this minimum level. The institutions enrolling the vast majority of students spend more than this; they would continue to rely on other income sources--tuition, state and local funds, gifts, ancillary revenues, categorical grants--for the excess over $1,200. (A companion student-aid system, discussed below, would assist in financing tuition, as well as room, board, and materials costs.)

It is not our purpose to spell out a grant formula in more detail than this, but some implications of institutional grants are clear from even the bare outline mentioned above. Let us examine, in turn, the case of public institutions currently spending less than $1,200 per student year, those spending that amount or more, and private institutions.

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* This is a hypothetical though defensible estimate, offered for illustrative pruposes only. Suppose $9,600 is the normal median faculty remuneration in the most basic 2-year and 4-year institutions. Suppose that the normal teaching load at such institutions is 12 hours per semester or the equivalent, or 24 semester hours per year. Finally, suppose an average of 20 students per course. If each faculty member therefore teaches 480 student hours per year, the cost per student hour of his salary is $20. If one then doubles this amount to allow for administrative services, materials, equipment, depreciation and interest on investment in facilities, an overhead rate which agrees well with current practice at such institutions, a cost per student hour of $40 is arrived at. Then, on the basis of 30 semester hours per full-time equivalent student-year, the figure of $1,200 is derived. Whether this or some other figure is chosen as the basis for aid, it should (subject to changes in national priorities) rise over time, following the long-run (but not cyclical) trend in median family income, a measure which includes but is not limited to inflationary increases. Another way of achieving this increase would be to state the standard minimum as a constant fraction (such as one-eighth) of median family income.

States and localities would have an incentive (its strength depending, of course, upon the matching formula) to bring per-pupil expenditures up to the $1,200 level, wherever they are presently below that. One question which arises is whether the implied "floor" of $1,200 per student-year would lead institutions to use resources inefficiently. We think it would not. Indeed, the general notion of non-categorical funding has received attention in recent years precisely because of widespread dissatisfaction with the limitations categorical programs tend to place on institution administrators in allocating resources effectively and efficiently within the context of special local and institutional circumstances.

Note, however, that general institutional funding does not obviate the need for categorical funding. But it would free those interested in categorical programs to address their special objectives in a more direct way than is possible when the only important source of incremental funds for institutions carries a heavy burden of restrictions on institutional use. The main argument for programs of general funding is to avoid the inefficiencies which arise when categorical programs must be used to finance general purposes.

For public institutions already spending as much as or more than the minimum standard, another kind of question arises. Suppose, for example, the formula adopted implies that the federal government will pay $400 of the first $1,200 per student-year. For an institution which already spends $2,000 (for instance), the $400 will be a comparative windfall. Will such a formula lead states and localities to reduce their expenditures on higher education, and substitute federal dollars? Another way to pose the question is to inquire whether some safeguards should be included which prevent such an occurrence.

While there is a possibility that states and localities may substitute federal money for their own, it is by no means clear

that that will necessarily be the case, nor is it clear that their doing so would necessarily be an undesirable outcome.

In some rough manner, state legislatures compare benefits to state residents with costs to state residents in allocating budget funds. There is no reason to assume that the addition of federal money will make higher education seem less valuable to state legislators, i.e., deserving of less state money per pupil. Especially in the long run, after transitional effects have dissipated, there is no reason to believe that locally provided funds will be significantly less.

Even if they were, this would not necessarily be an undesirable outcome. We have argued above that higher education is, in part, a national good, with benefits which extend beyond the person educated and beyond state boundaries. To the extent that this is true, absence of a system of non-categorical federal grants implies a hidden state-local subsidy to the nation as a whole, and hence in effect to the federal government. When a system of federal grants is then added to such a situation, the effect is to free up state and local funds being used to subsidize the rest of the nation, and permit those funds to be used for state-local purposes. As this is written, the Congress is considering a variety of revenue-sharing schemes. Our argument is that, above and beyond revenue-sharing, or indeed prior to revenue-sharing, the federal government ought to satisfy its obligations to lower units of government for national goods provided by them.

Finally, let us examine the case of so-called "private" universities. We say "so-called," because these institutions do not behave in a significantly different way from public institutions, because they respond to social needs roughly to the same extent as do public institutions, and because in any case they are not really privately owned, but are rather held in trust for the public interest by Boards of Trustees. There is no doubt in our minds

that these institutions ought to be eligible for federal institutional aid in a manner no different from public institutions. The major unresolved question is whether such federal aid ought to be contingent upon state aid to the same institutions, inducing more states to follow the lead of the small number, notably New York, which have developed strong systems of both institutional and student aid affecting their private institutions.

There are strong arguments on both sides of this question. On the one hand, making federal aid contingent on state aid (for instance, to match them, dollar for dollar) would create a powerful inducement for states to create aid systems, and to satisfy their obligations to the private institutions. On the other hand, however, such a requirement would mean that states would have the power to pass upon, and therefore to veto, federal aid to private institutions of post-secondary education. This would reduce drastically the effects described earlier of opening up the educational system, and encouraging the creation of wholly new institutions, in response to student needs and demands.

2) Student aid. As noted, programs of general funding for institutions should not be designed to accommodate the differential costs involved in either different levels or different types of instruction. Such differentials should be financed through categorical programs and from non-governmental sources including revenue from students. If educational opportunity is to be enhanced, one essential categorical program is that which addresses the need for student financial aid.

The appropriate device for student aid is some variant of the deferred tuition plan. We refer to schemes by which students would agree to pay some proportion of their after-education income to a lender for a fixed period of time. Deferred tuition requires federal involvement, for two reasons. First, there are credit risks which are not social risks. That is, the payoff to society as a whole from large numbers of college-educated persons is

easier to calculate than is the payoff to individuals or even to classes of individuals. This, basically, is the rationale for federal involvement in a variety of loan-guarantee, loan-insurance, and direct-credit programs; it applies with more strength to the deferred tuition plan than to some existing federal programs. And second, even ideally, deferred tuition schemes should not be self-liquidating.

To see why, take a few examples. First, suppose higher education did not raise a student's income much. By fixing the percentage of his income he will pay, and by setting a ceiling to the number of repayment years, we may limit his repayment to less than the loan amount. Second, suppose a student earned more than enough to provide, according to the percentage payback and payback period, for his own borrowed tuition, interest included. Since an obligation to make such an overpayment would not be required of one wealthy enough to pay his expenses out of current income, we recommend that any student's obligation to repay end when he has fully covered his tuition borrowings and interest. Finally, lump-sum and rapid-payback options should be available, at the choice of the student.

There would be, then, three classes of participants: Those who repaid their obligations in the allotted time; those who repaid their obligations in less than the allotted time; and those who did not fully repay their obligations. The system would chronically lose money. The losses would be the net subsidy, to those with low post-education or career incomes.

The overall system would consist, then, of the following. There would be federal grants to institutions equal to some percentage of the minimum acceptable cost of educating students. The major cost would still be borne by students, however, who pay some tuition at most institutions, and who moreover would give up time, and pay for room, board, transportation, books, materials, etc.

A form of student aid would be available to cover these costs, and to cover part or all of tuition payments at the vast majority of colleges at which per-pupil costs would exceed the minimum. The reason a deferred tuition scheme is suggested is that it provides a way of linking the amount of aid to the student's post-education income, rather than to his parents' income at the time he is enrolled.

There is merit to such a scheme independently of the existence of a crisis state in higher education. But a crisis does exist; and, though we have held out hope that it may be over by the end of this decade, the decade will prove crucial for the quality of higher education and for the survival of a number of individual institutions. Indeed, the fact that an end to the crisis may be in sight makes it foolhardy to endanger our remarkable and evolving system of higher education by failing to provide needed federal support.